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REMARKS/ARGUMENTS

In the Office Action dated January 26, 2004, Claims 1-64 are pending. Claims 9, 12-16, 21, 23-25, 37-46, 48-54, and 58-64 are withdrawn from further consideration pursuant to 37 CFR § 1.142(b) as being drawn to a nonelected species/invention. Claim 22 is objected to for an informality. Claims 1-3, 10, 11, 17, 18, 20, and 36 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,722,497 to Hiestand, et al. in view of any of U.S. Patent Nos. 5,477,596 to Schlosstein, et al., 5,016,359 to Nagaoka, et al., 5,635,833 to Onodera, et al., or 6,095,728 to Howie. Claims 1-3, 10, 11, 17, 20, and 36 are also rejected under 35 U.S.C. § 103(a) as being unpatentable over either of U.S. Patent No. 4,422,384 to Johnson, et al. or U.S. Patent No. 2,921,492 to Worth in view of Schlosstein, et al., Nagaoka, et al., Onodera, et al., or Howie. Claims 26, 28, and 29 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Johnson in view of any of Schlosstein, et al., Nagaoka, et al., Onodera, et al., or Howie and further in view of U.S. Patent No. 6,158,666 to Banks, et al. Claims 26 and 27 are also rejected under 35 U.S.C. § 103(a) as being unpatentable over Johnson in view of any of Schlosstein, et al., Nagaoka, et al., Onodera, et al., or Howie and further in view of U.S. Patent No. 3,722,711 to Seidel. Claim 35 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Johnson in view of any of Schlosstein, et al., Nagaoka, et al., Onodera, et al., or Howie and further in view of Seidel and further in view of U.S. Patent No. 5,718,545 to Husted. Claims 4-8, 19, 22, and 30-34 are objected to as being dependent upon a rejected base claim but would be allowable if rewritten in independent form including all of the limitations of the base claim and intervening claims. Claims 47 and 55-57 are allowed. Thus, of the rejected claims, only Claim 1 is independent.

With regard to the objection to Claim 22, Applicant has amended the claim as suggested by the Examiner. Applicant notes that the amendment is made only to correct the grammatical informality identified by the Examiner, and the amendment is entirely unrelated to the patentability of the claim.

Applicant first addresses the rejection of Claims 1-3, 10, 11, 17, 18, 20, and 36 under 35 U.S.C. § 103(a) as being unpatentable over Hiestand, et al. in view of any of Schlosstein, et al.,

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Nagaoka, et al., Onodera, et al., or Howie, and the rejection of Claims 1-3, 10, 11, 17, 20, and 36 under the same section as being unpatentable over either of Johnson, et al. or Worth in view of Schlosstein, et al., Nagaoka, et al., Onodera, et al., or Howie. In this regard, Applicant respectfully submits that none of the cited references teaches the claimed invention. In particular, none of the references teaches a production system for processing a workpiece, including "an index system including a plurality of index devices removably mounted on the workpiece at known longitudinally spaced locations therealong, and a longitudinally extending index member releasably engaged with at least two of the index devices such that a position and orientation of the index member are fixed relative to the workpiece by the index devices," as set forth in Claim 1.

Johnson, et al. describes a tractor that supports a metal-working tool along a track fixed to a workpiece. In her remarks, the Examiner states that "In Johnson et al., the devices described in col. 1, lines 10-11 that secure the track to the workpiece are considered the claimed 'index devices'." See page 3 of the Office Action. The cited portion of Johnson, et al. provides that the "track is fixed to the workpiece in relation to the place where the tool is to act, said track being positioned by magnets, vacuum chucks or the like." Col. 1, lines 9 to 11. However, Johnson, et al. does not teach or suggest that the magnets, vacuum chucks, or the like are "mounted on the workpiece at known longitudinally spaced locations therealong," as recited in Claim 1. Similarly, Hiestand, et al. and Worth describes saws for making cuts along a surface. For example, Hiestand, et al. describes a wall saw that can move along a tubular track 26 that is connected to a flat surface 10 by brackets 28, 28'. Worth describes a portable metal slotting saw that moves along track and rack 16 that can be clamped to a wing by C-clamps 18 (Figure 1). However, Hiestand, et al. and Worth do not teach or describe that the bracket 28, 28' or C-clamps 18, respectively, are mounted "at known longitudinally spaced locations."

Regarding the secondary references, the Examiner has asserted that "each of Schlosstein et al., Nagaoka et al., Onodera et al., and Howie teaches a linear scale in the form of an 'encoder tape' or 'position-indicating strip' which is provided on a stationary member, and a reader that is provided on a moveable member for 'position-indicating features' of the scale as relative movement occurs between the movable member and the stationary member." Page 6 of the

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Office Action. However, the Examiner has not asserted that any of the secondary references discloses the claimed indexing system, including "a plurality of index devices removably mounted on the workpiece at known longitudinally spaced locations therealong," and Applicant finds no such teaching or suggestion in the references. In particular, Schlosstein, et al. is directed to a machine for positioning clips in a stringer and drilling holes in the stringer and clips. A support bed 30 for the stringer 14 includes a box beam 31, and a carriage 40, including a frame 42 and truck 44, travels along a pair of rails 48, 48' on the back side of the box beam 31. Index devices are not removably mounted on the workpiece, as recited in Claim 1. Nagaoka, et al. and Onodera, et al. both describe linear scale devices. Neither reference teaches or suggests "a plurality of index devices removably mounted on the workpiece at known longitudinally spaced locations therealong," as claimed. Similarly, Howie is directed to a translation apparatus for translating positional movement of a cutting tool of a cutting machine, and also fails to teach the claimed limitation.

Further, Applicant submits that it would not have been obvious to provide "an index system including a plurality of index devices removably mounted on the workpiece at known longitudinally spaced locations therealong" with the devices described by Johnson, et al., Hiestand, et al., or Worth. The significance of providing index devices at known longitudinally spaced locations is discussed in the specification of the present application, for example, at page 22, line 10 and following: For example, in the case of an elongate workpiece that can grow substantially longer during manufacturing, the placement of holes and other items such as stiffeners, chords, or the like can be affected. Thus, the present application describes that the growth can be monitored and taken into account during the manufacturing process. In particular, the index devices 30 can be mounted on the workpiece S at locations that are spaced apart along the X direction prior to the workpiece being worked upon in any manner that would result in any significant elongation of the workpiece so that the nominal X locations of the index devices are known. The actual X locations of the index devices 30 can then be determined through the use of the indexing system, including the index member 60 and the reader 50.

In contrast, Johnson, et al., Hiestand, et al., and Worth do not provide any such teaching or suggestion. Moreover, no motivation existed for combining any such teaching or reference

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with Johnson, et al., Hiestand, et al., or Worth. In this regard, Applicant asserts that Johnson, et al., Hiestand, et al., and Worth are directed to processes that are to be performed along a range of motion and not at discrete locations along the length of the workpiece. For example, Johnson, et al. is directed to a device that "permit[s] a metal working tool (e.g. gas cutting or welding, Air Carbon-Arc Cutting or Gouging, mechanical machine or the like) to be moved horizontally, vertically, or circumferentially or along any other path that can be defined by the track." Col. 2, lines 32 to 40. Such equipment can be used to "produce a gouge, machined surface or groove and or a finished weldment." Col. 1, lines 11 to 17. Hiestand, et al. and Worth are directed to devices for making saw cuts along the length of a wall or workpiece. None of these are operations that are performed at discrete locations along the length of the workpiece requiring the index devices to be at known longitudinally spaced locations therealong.

Thus, Applicant asserts that Claim 1 is patentable over the cited references. Further, each of the rejected Claims 2-3, 10, 11, 17, 18, 20, 26-28, 29, 35, and 36 is dependent on Claim 1 and patentable for the same reasons.

The dependent claims provide various additional bases of patentability over the cited patents. For example, Claim 22 states that "the index support system includes a pair of clamp assemblies operable to applying clamping forces to the workpiece from opposite sides thereof." The Examiner has previously asserted, in connection with Banks, et al., that upper and lower portions of a single side of the workpiece can be considered "opposite." See Office Action dated August 21, 2003, page 4. However, Applicant submits that the upper and lower portions of a single side of the workpiece are not opposite sides of the workpiece, as indicated by the claim.

Regarding the other rejections, i.e., of Claims 26-29 and 36, Applicant submits that each of the remaining references cited by the Examiner also fails to teach the claimed arrangement of index devices mounted along the workpiece. Banks, et al. is directed to a mini-riveter and specifically discounts the use of a position-establishing fixture, stating that "unlike prior art fastening devices which home or zero their coordinate systems on a fixture, the mini-riveter system 100 is able to home on the coordination holes being used to align the two panels 110." Col. 6, lines 52 to 55. Husted and Seidel do not discuss the use of a plurality of index devices that are removably mounted on the workpiece and, in particular, index devices mounted at

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known longitudinally spaced locations along the workpiece. Thus, Applicant submits that Claims 26-29 and 35 are patentable over the cited references for the reasons set forth above in connection with Claim 1.

Further, Claims 26-29 and 35 provide additional bases of patentability over the cited references. Claim 26 states that "the machine module comprises a drill mounted on a frame that is traversable along the index member." Claim 27, which is dependent on Claims 1 and 26, further states that the production system includes "an automatic drill changer mounted on the frame and supporting a plurality of drilling tools, the drill changer and drill being cooperative to change a drilling tool held in the drill." Claim 35 is also dependent on Claim 26 and recites that "the drill is rotatable about at least one rotation axis for varying a drilling direction along which a hole is drilled in the workpiece." Claim 28 recites "a fastener insertion device mounted on the frame and operable to insert a fastener into a hole drilled in the workpiece by the drill." Claim 29, which is dependent on Claim 28, further requires that "the frame includes a clamp mechanism operable to clamp together parts of the workpiece to be joined by a fastener." While Johnson, et al. does not teach a drill or fastener insertion device, the Examiner has asserted that it would have been obvious to have substituted the tool carrier as taught by Seidel or one of the drill or riveting device of Banks for the tool positioning device taught by Johnson, et al. Applicant respectfully disagrees. While the tractor described by Johnson, et al. can move along a workpiece, Johnson, et al. does not teach that the machine can move to any particular known positions along the workpiece. That is, the tractor is not equipped to move to a predetermined longitudinal position as required for performing a task at a discrete longitudinal location, as is typically required for drilling a hole or inserting a rivet. Thus, it would not have been obvious to provide a drill or a fastener insertion device on the tractor of Johnson, et al. For these additional reasons, Claims 26-29 and 35 are patentable over the cited references.

For the foregoing reasons, Applicant submits that all of the pending Claims 1-3, 10, 11, 17, 18, 20, 26-29, 35, and 36 are allowable.

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CONCLUSIONS

In view of the amendments and remarks presented above, Applicant submits that the present application is in condition for allowance. As such, the issuance of a Notice of Allowance is therefore respectfully requested. In order to expedite the examination of the present application, the Examiner is encouraged to contact Applicant's undersigned attorney in order to resolve any remaining issues.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,



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